

STU606I - STU65G4

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

V_{BR} : 6.8 - 440 Volts

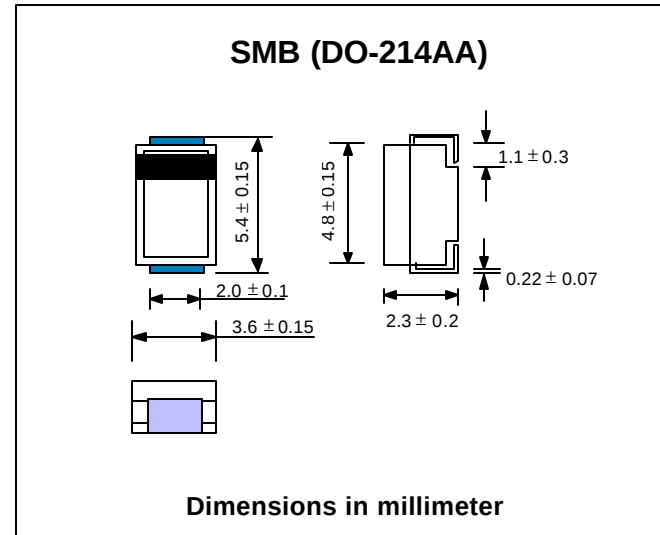
P_{PK} : 600 Watts

FEATURES :

- * 600W surge capability at 1ms
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time : typically less than 1.0 ps from 0 volt to V_{BR(min.)}
- * Typical I_R less than 1μA above 10V

MECHANICAL DATA

- * Case : SMB Molded plastic
- * Epoxy : UL94V-O rate flame retardant
- * Lead : Lead Formed for Surface Mount
- * Polarity : Color band denotes cathode end except Bipolar.
- * Mounting position : Any
- * Weight : 0.093 grams



DEVICES FOR BIPOLAR APPLICATIONS

For bi-directional altered the third letter of type from "U" to be "B".
Electrical characteristics apply in both directions

MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at Ta = 25 °C, Tp=1ms (Note1)	P _{PK}	Minimum 600	Watts
Steady State Power Dissipation at T _L = 75 °C	P _D	5.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	100	Amps.
Operating and Storage Temperature Range	T _J , T _{STG}	- 55 to + 150	°C

Note :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on copper Lead area at 5.0 mm² (0.013 mm thick).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per Minutes maximum.

UPDATE : JULY 13, 1998

ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ It (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ VRWM	Maximum Reverse Current	Maximum Clamping Voltage @ IRSM	Maximum Temperature Co-efficient of VBR of VBR of VBR				
	VBR (V)		It						VRWM	IR	IRSM	VRSM
	Min.	Max.	(mA)						(V)	(μA)	(A)	(V)
STU606I	6.12	7.48	10	5.50	1000	55.5	10.8	0.057				
STU656I	6.45	7.14	10	5.80	1000	57.0	10.5	0.057				
STU607F	6.75	8.25	10	6.05	500	51.0	11.7	0.061				
STU657F	7.13	7.88	10	6.40	500	53.0	11.3	0.061				
STU608C	7.38	9.02	10	6.63	200	48.0	12.5	0.065				
STU658C	7.79	8.61	10	7.02	200	50.0	12.1	0.065				
STU609B	8.19	10.0	1.0	7.37	50	44.0	13.8	0.068				
STU659B	8.65	9.55	1.0	7.78	50	45.0	13.4	0.068				
STU6010	9.00	11.0	1.0	8.10	10	40.0	15.0	0.073				
STU6510	9.50	10.5	1.0	8.55	10	41.0	14.5	0.073				
STU6011	9.90	12.1	1.0	8.92	5.0	37.0	16.2	0.075				
STU6511	10.5	11.6	1.0	9.40	5.0	38.0	15.6	0.075				
STU6012	10.8	13.2	1.0	9.72	5.0	35.0	17.3	0.078				
STU6512	11.4	12.6	1.0	10.2	5.0	36.0	16.7	0.078				
STU6013	11.7	14.3	1.0	10.5	5.0	32.0	19.0	0.081				
STU6513	12.4	13.7	1.0	11.1	5.0	33.0	18.2	0.081				
STU6015	13.5	16.5	1.0	12.1	5.0	27.0	22.0	0.084				
STU6515	14.3	15.8	1.0	12.8	5.0	28.0	21.2	0.084				
STU6016	14.4	17.6	1.0	12.9	5.0	26.0	23.5	0.086				
STU6516	15.2	16.8	1.0	13.6	5.0	27.0	22.5	0.086				
STU6018	16.2	19.8	1.0	14.5	5.0	23.0	26.5	0.088				
STU6518	17.1	18.9	1.0	15.3	5.0	24.0	25.2	0.088				
STU6020	18.0	22.0	1.0	16.2	5.0	21.0	29.1	0.090				
STU6520	19.0	21.0	1.0	17.1	5.0	22.0	27.7	0.090				
STU6022	19.8	24.2	1.0	17.8	5.0	19.0	31.9	0.092				
STU6522	20.9	23.1	1.0	18.8	5.0	20.0	30.6	0.092				
STU6024	21.6	26.4	1.0	19.4	5.0	17.0	34.7	0.094				
STU6524	22.8	25.2	1.0	20.5	5.0	18.0	33.2	0.094				
STU6027	24.3	29.7	1.0	21.8	5.0	15.0	39.1	0.096				
STU6527	25.7	28.4	1.0	23.1	5.0	16.0	37.5	0.096				
STU6030	27.0	33.0	1.0	24.3	5.0	14.0	43.5	0.097				
STU6530	28.5	31.5	1.0	25.6	5.0	14.4	41.4	0.097				
STU6033	29.7	36.3	1.0	26.8	5.0	12.6	47.7	0.098				
STU6533	31.4	34.7	1.0	28.2	5.0	13.2	45.7	0.098				
STU6036	32.4	39.6	1.0	29.1	5.0	11.6	52.0	0.099				
STU6536	34.2	37.8	1.0	30.8	5.0	12.0	49.9	0.099				
STU6039	35.1	42.9	1.0	31.6	5.0	10.6	56.4	0.100				
STU6539	37.1	41.0	1.0	33.3	5.0	11.2	53.9	0.100				
STU6043	38.7	47.3	1.0	34.8	5.0	9.6	61.9	0.101				
STU6543	40.9	45.2	1.0	36.8	5.0	10.1	59.3	0.101				
STU6047	42.3	51.7	1.0	38.1	5.0	8.9	67.8	0.101				
STU6547	44.7	49.4	1.0	40.2	5.0	9.3	64.8	0.101				
STU6051	45.9	56.1	1.0	41.3	5.0	8.2	73.5	0.102				
STU6551	48.5	53.6	1.0	43.6	5.0	8.6	70.1	0.102				
STU6056	50.4	61.6	1.0	45.4	5.0	7.4	80.5	0.103				
STU6556	53.2	58.8	1.0	47.8	5.0	7.8	77.0	0.103				
STU6062	55.8	68.2	1.0	50.2	5.0	6.8	89.0	0.104				

ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ It (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ VRWM	Maximum Reverse Current	Maximum Clamping Voltage @ IRSM	Maximum Temperature Co-efficient of VBR of VBR
	VBR (V)		It					
	Min.	Max.	(mA)	(V)	(μA)	(A)	(V)	(% / °C)
STU6562	58.9	65.1	1.0	53.0	5.0	7.1	85.0	0.104
STU6068	61.2	74.8	1.0	55.1	5.0	6.1	98.0	0.104
STU6568	64.6	71.4	1.0	58.1	5.0	6.5	92.0	0.104
STU6075	67.5	82.5	1.0	60.7	5.0	5.5	108	0.105
STU6575	71.3	78.8	1.0	64.1	5.0	5.8	103	0.105
STU6082	73.8	90.2	1.0	66.4	5.0	5.1	118	0.105
STU6582	77.9	86.1	1.0	70.1	5.0	5.3	113	0.105
STU6091	81.9	100	1.0	73.7	5.0	4.5	131	0.106
STU6591	86.5	95.5	1.0	77.8	5.0	4.8	125	0.106
STU60B0	90.0	110	1.0	81.0	5.0	4.2	144	0.106
STU65B0	95.0	105	1.0	85.5	5.0	4.4	137	0.106
STU60B1	99.0	121	1.0	89.2	5.0	3.8	158	0.107
STU65B1	105	116	1.0	94.0	5.0	4.0	152	0.107
STU60B2	108	132	1.0	97.2	5.0	3.5	173	0.107
STU65B2	114	126	1.0	102	5.0	3.6	165	0.107
STU60B3	117	143	1.0	106	5.0	3.2	187	0.107
STU65B3	124	137	1.0	111	5.0	3.3	179	0.107
STU60B5	135	165	1.0	121	5.0	2.8	215	0.108
STU65B5	143	158	1.0	128	5.0	2.9	207	0.108
STU60B6	144	176	1.0	130	5.0	2.6	230	0.108
STU65B6	152	168	1.0	136	5.0	2.7	219	0.108
STU60B7	153	187	1.0	138	5.0	2.5	244	0.108
STU65B7	162	179	1.0	145	5.0	2.6	234	0.108
STU60B8	162	198	1.0	146	5.0	2.3	258	0.108
STU65B8	171	189	1.0	154	5.0	2.4	246	0.108
STU60D0	180	220	1.0	162	5.0	2.1	287	0.108
STU65D0	190	210	1.0	171	5.0	2.2	274	0.108
STU60D2	198	242	1.0	175	5.0	1.75	344	0.108
STU65D2	209	231	1.0	185	5.0	1.83	328	0.108
STU60D5	225	275	1.0	202	5.0	1.67	360	0.110
STU65D5	237	263	1.0	214	5.0	1.75	344	0.110
STU60E0	270	330	1.0	243	5.0	1.40	430	0.110
STU65E0	285	315	1.0	256	5.0	1.45	414	0.110
STU60E5	315	385	1.0	284	5.0	1.20	504	0.110
STU65E5	332	368	1.0	300	5.0	1.25	482	0.110
STU60G0	360	440	1.0	324	5.0	1.05	574	0.110
STU65G0	380	420	1.0	342	5.0	1.10	548	0.110
STU60G4	396	484	1.0	356	5.0	0.95	631	0.110
STU65G4	418	462	1.0	376	5.0	1.00	602	0.110

Note:

- (1) V_{BR} measured after I_t applied for 300 μs . I_t = square wave pulse or equivalent.
- (2) $V_F = 3.5 V_{max}$, $I_F = 50$ Amps. (6.8 Volts thru 91 Volts)
 $V_F = 5.0 V_{max}$, $I_F = 50$ Amps. (100 Volts thru 440 Volts) per 1/2 square or equivalent sine wave.
 $PW = 8.3$ ms, duty cycle = 4 pulses per minute maximum.
- (3) For Bipolar types moving V_R of 10 Volts and under, the I_R limit is doubled.
- (4) "STU" or "STB" will be omitted in marking on the diode.

RATING AND CHARACTERISTIC CURVES (STU606I - STU65G4)

FIG.1 - PULSE DERATING CURVE

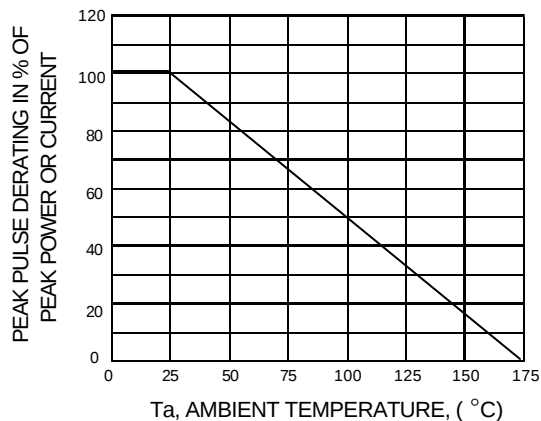


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

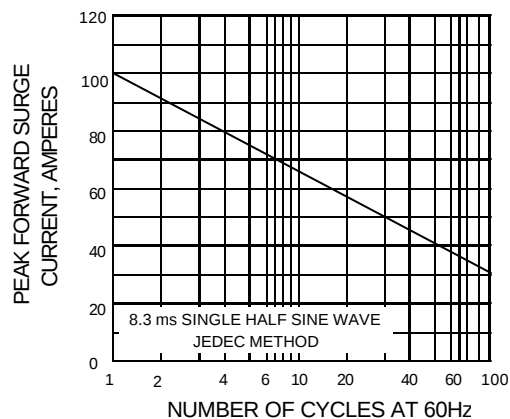


FIG.3 - STEADY STATE POWER DERATING

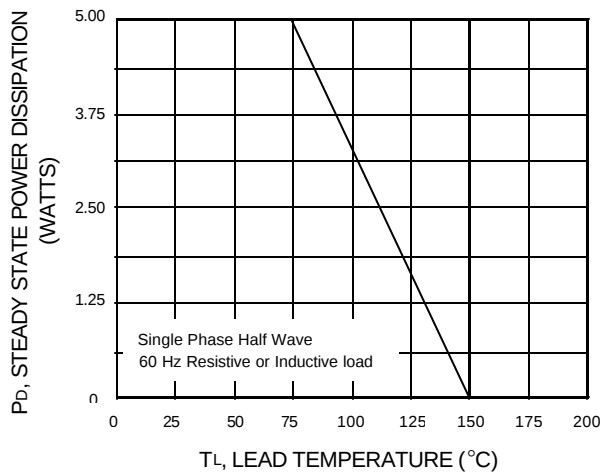


FIG.4 - PULSE RATING CURVE

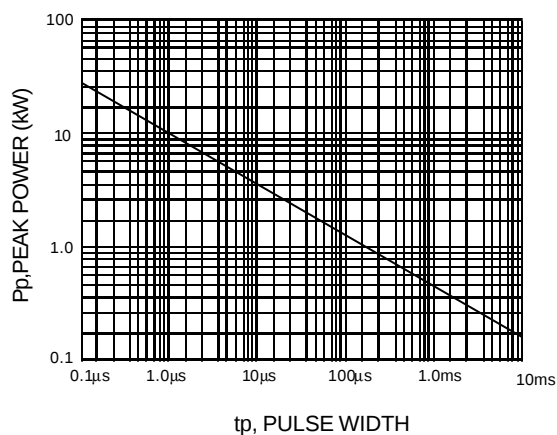


FIG.5 - PULSE WAVEFORM

